OIPE JC109
MAR 21 2005
PATENT & TRADEMARK OFFICE

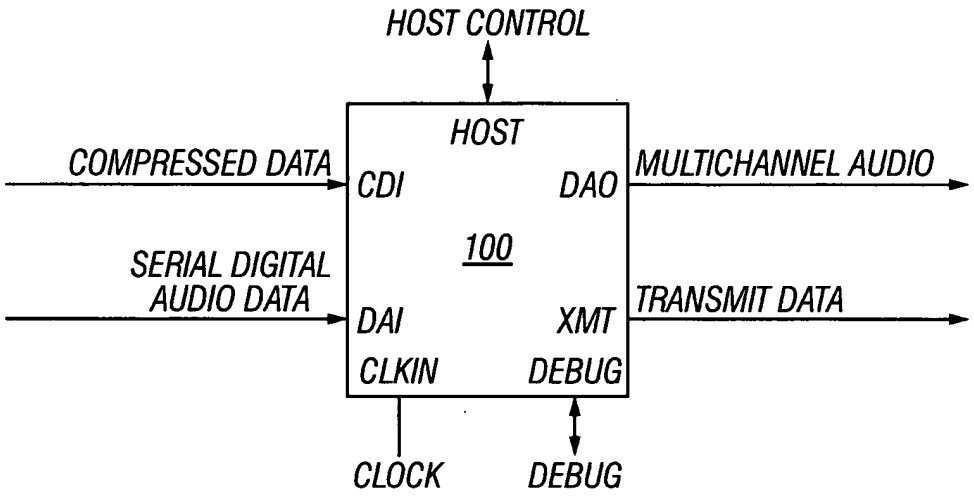

FIG. 1A

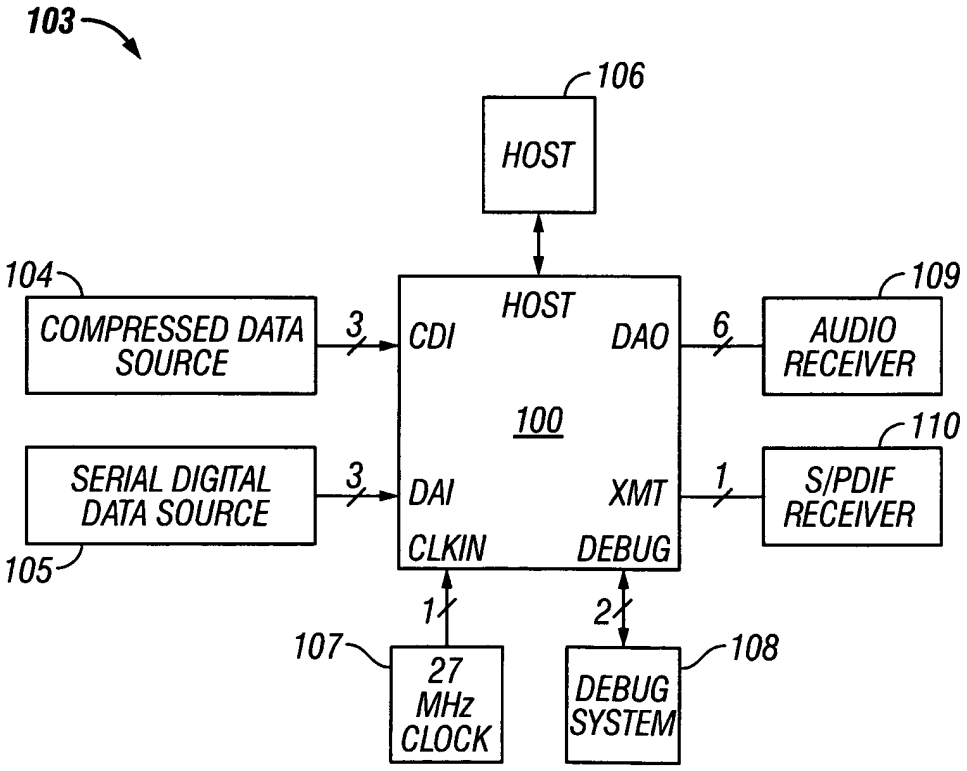

FIG. 1B

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JC10

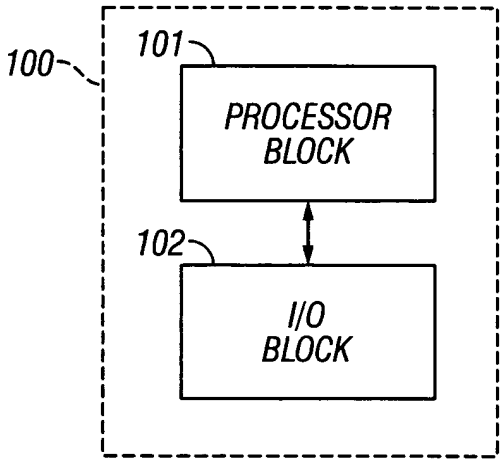

FIG. 1C

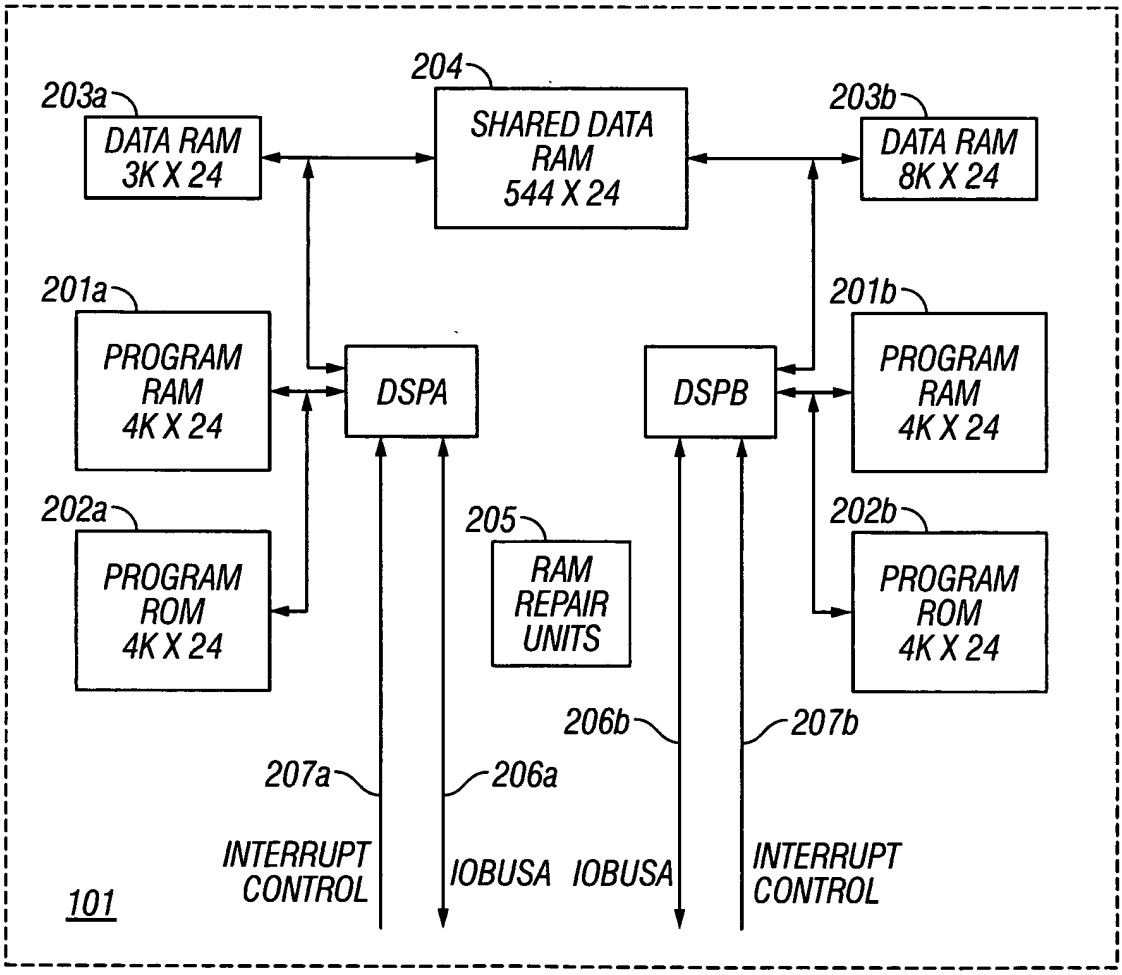

FIG. 2

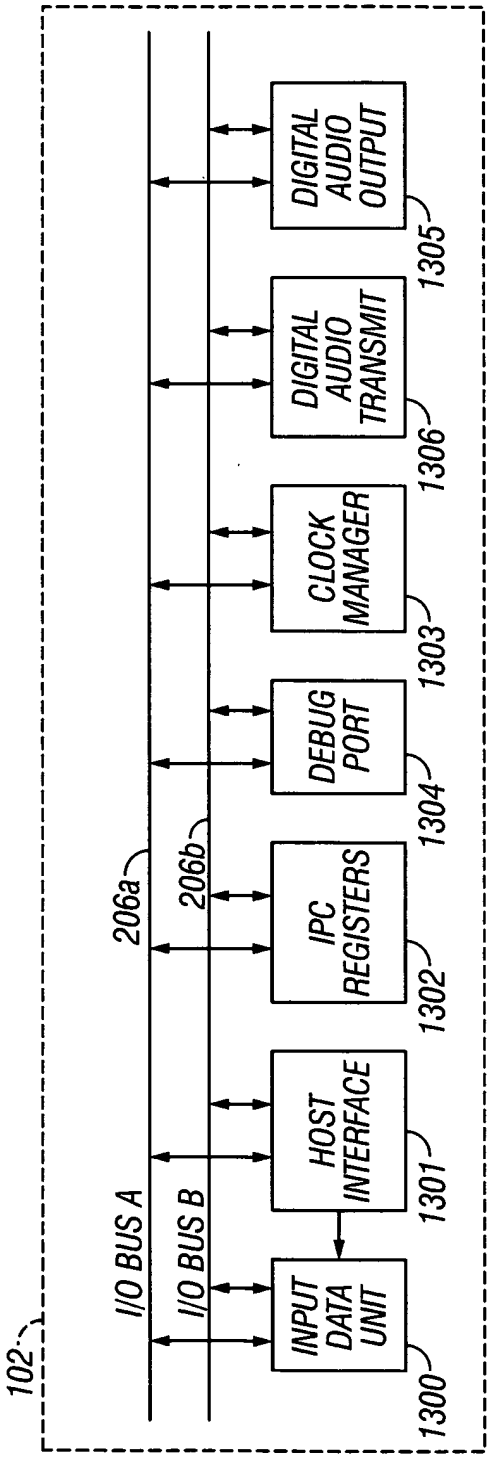
102
I/O BUS A
I/O BUS B
206a
206b
INPUT DATA UNIT
1300
HOST INTERFACE
1301
IPC REGISTERS
1302
DEBUG PORT
1304
CLOCK MANAGER
1303
DIGITAL AUDIO TRANSMIT
1306
DIGITAL AUDIO OUTPUT
1305

FIG. 3

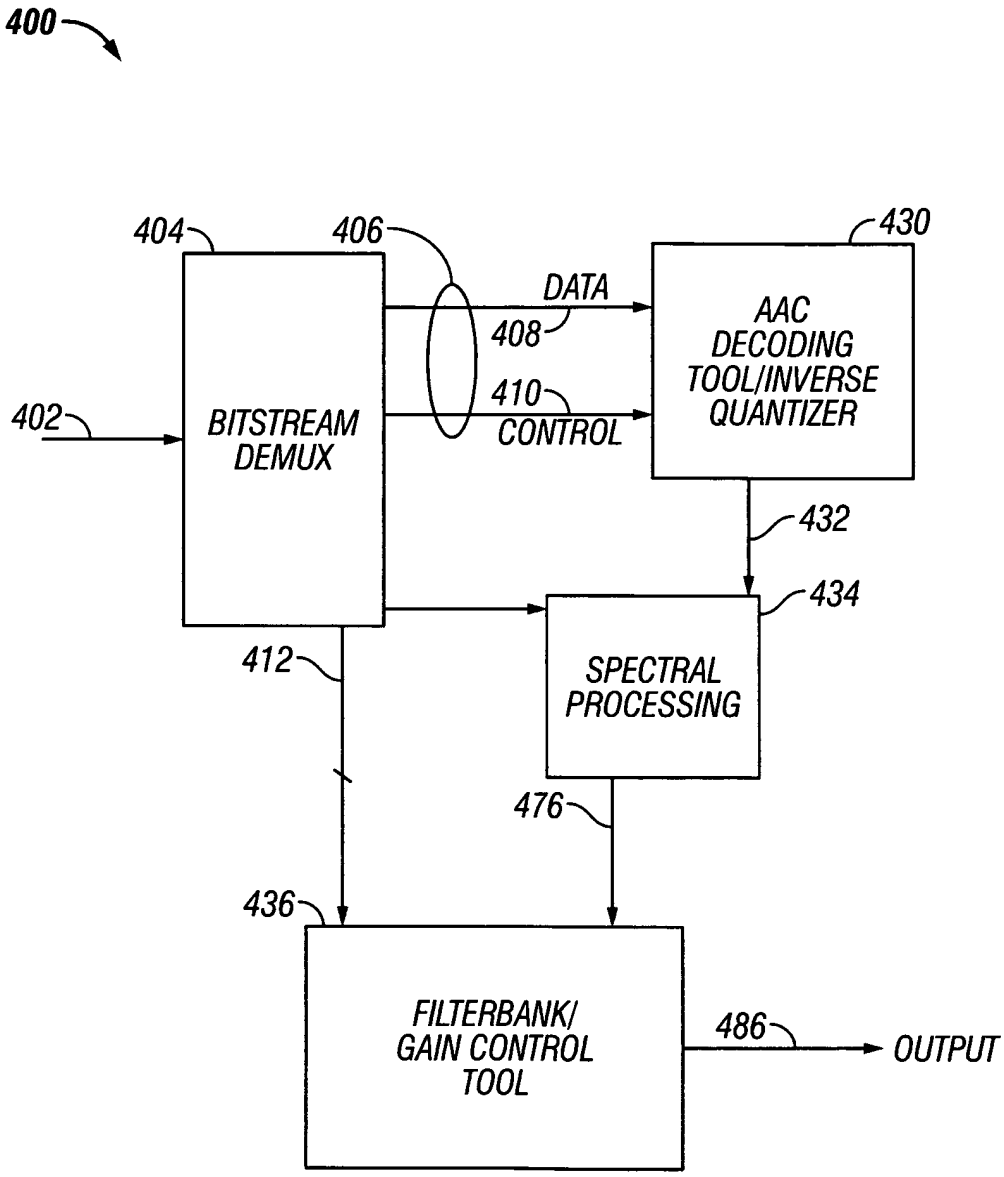
400
404
406
430
DATA
408
410
CONTROL
AAC
DECODING
TOOL/INVERSE
QUANTIZER
402
BITSTREAM
DEMUX
432
434
412
SPECTRAL
PROCESSING
476
436
FILTERBANK/
GAIN CONTROL
TOOL
486
OUTPUT

FIG. 4

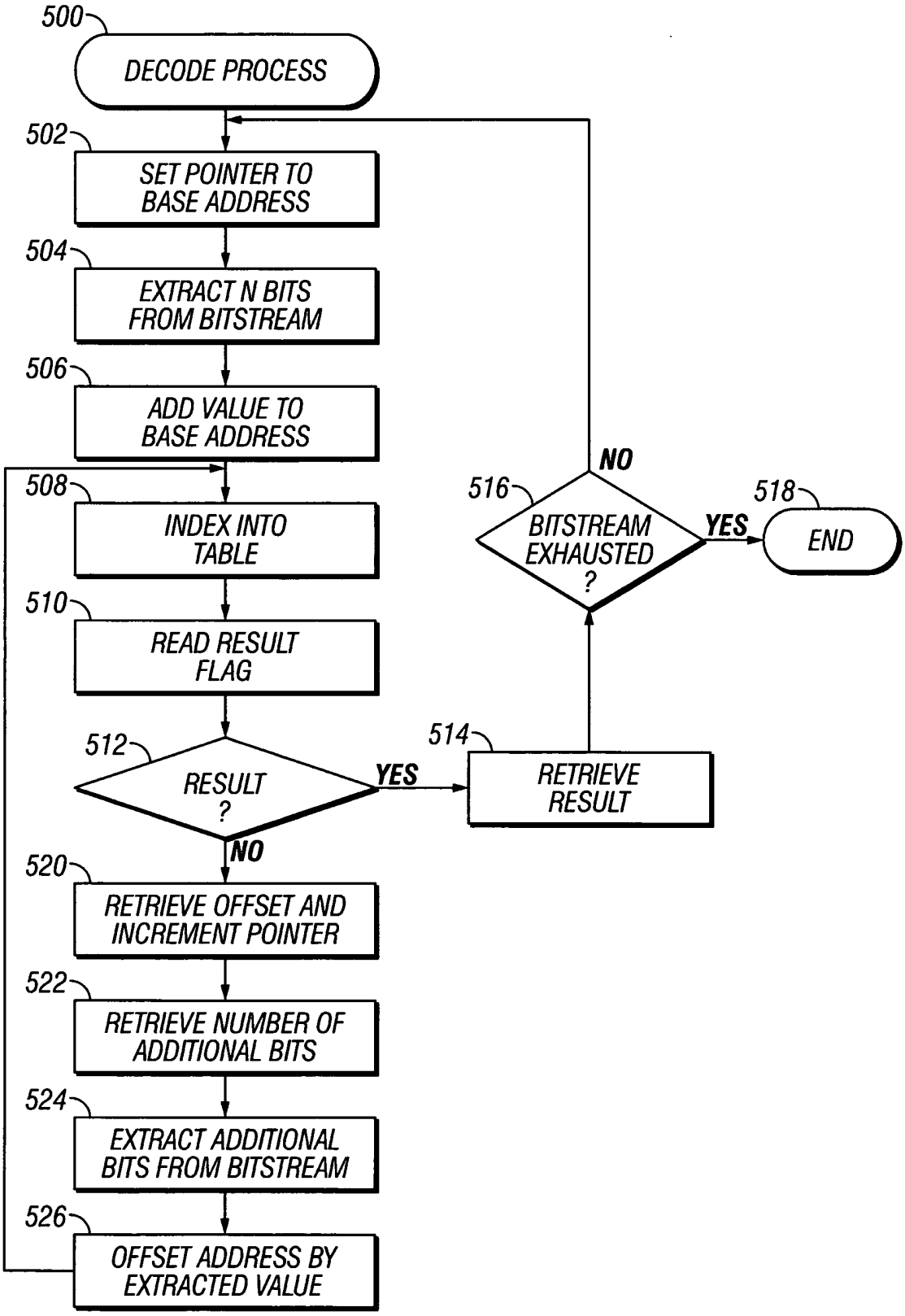
500
DECODE PROCESS
502
SET POINTER TO BASE ADDRESS
504
EXTRACT N BITS FROM BITSTREAM
506
ADD VALUE TO BASE ADDRESS
508
INDEX INTO TABLE
510
READ RESULT FLAG
512
RESULT ?
YES
514
RETRIEVE RESULT
NO
516
BITSTREAM EXHAUSTED ?
NO
YES
518
END
520
RETRIEVE OFFSET AND INCREMENT POINTER
522
RETRIEVE NUMBER OF ADDITIONAL BITS
524
EXTRACT ADDITIONAL BITS FROM BITSTREAM
526
OFFSET ADDRESS BY EXTRACTED VALUE

FIG. 5

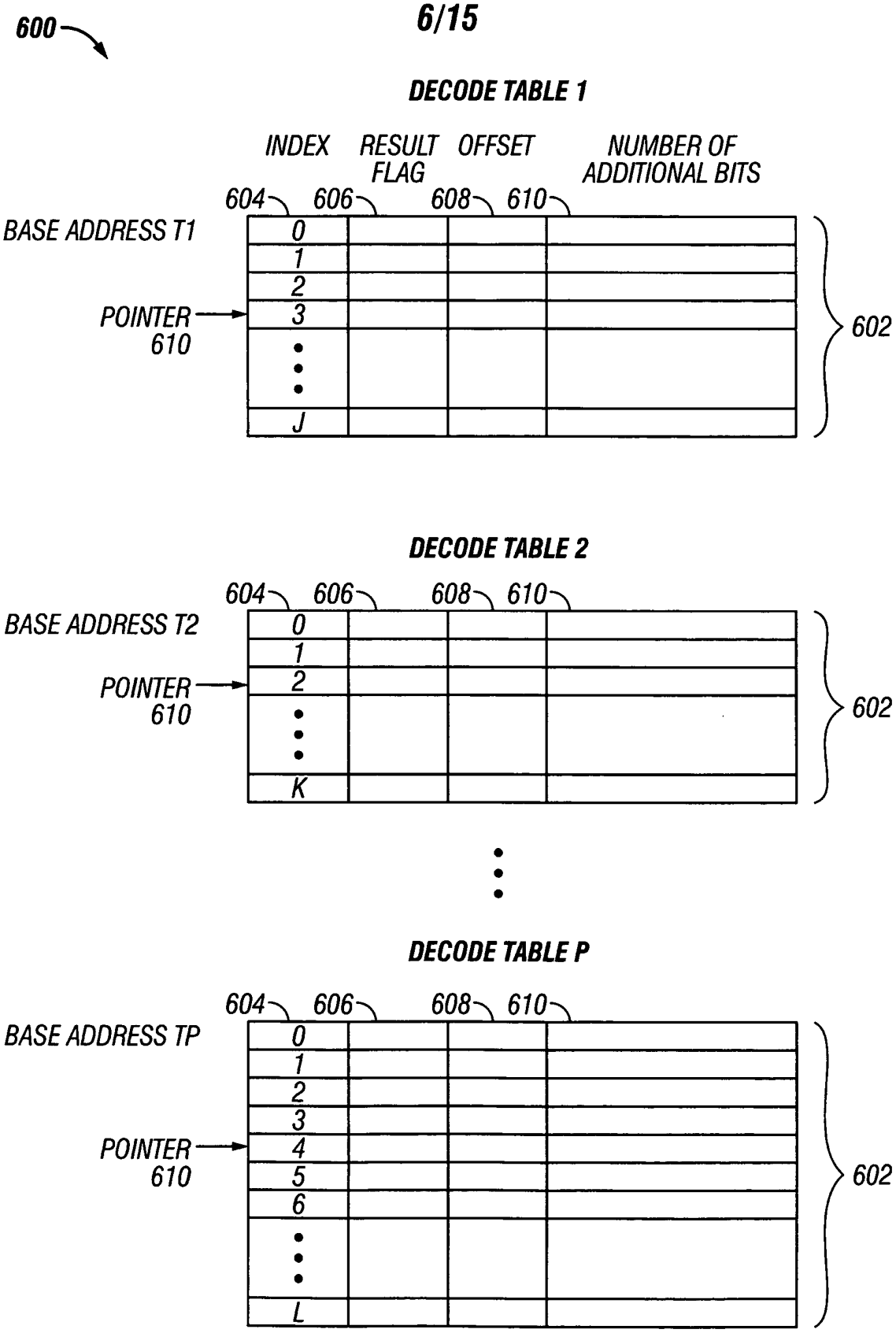
600
DECODE TABLE 1
INDEX
RESULT FLAG
OFFSET
NUMBER OF ADDITIONAL BITS
604
606
608
610
BASE ADDRESS T1
POINTER 610
0
1
2
3
J
602
DECODE TABLE 2
BASE ADDRESS T2
K
DECODE TABLE P
BASE ADDRESS TP
4
5
6
L

FIG. 6A

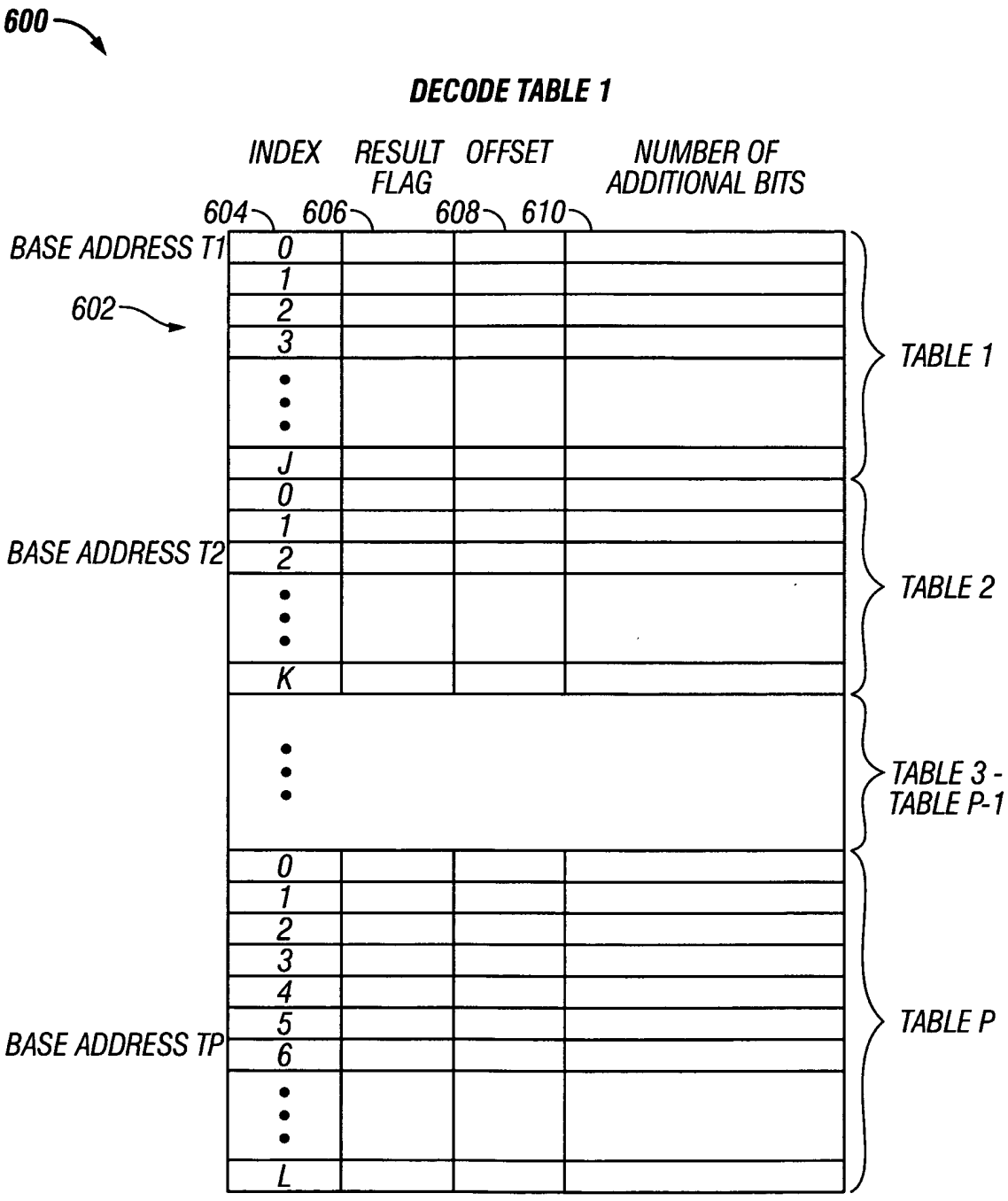
600
DECODE TABLE 1
INDEX
RESULT FLAG
OFFSET
NUMBER OF ADDITIONAL BITS
604
606
608
610
602
BASE ADDRESS T1
BASE ADDRESS T2
BASE ADDRESS TP
0
1
2
3
J
0
1
2
K
0
1
2
3
4
5
6
L
TABLE 1
TABLE 2
TABLE 3 - TABLE P-1
TABLE P

FIG. 6B

700

702 CODEWORD	704 RESULT
00	"RESULT 1"
01	"RESULT 2"
100	"RESULT 3"
101	"RESULT 4"
1100	"RESULT 5"
1101	"RESULT 6"
1110	"RESULT 7"
111100	"RESULT 8"
111101	"RESULT 9"
111110	"RESULT 10"
111111	"RESULT 11"

FIG. 7

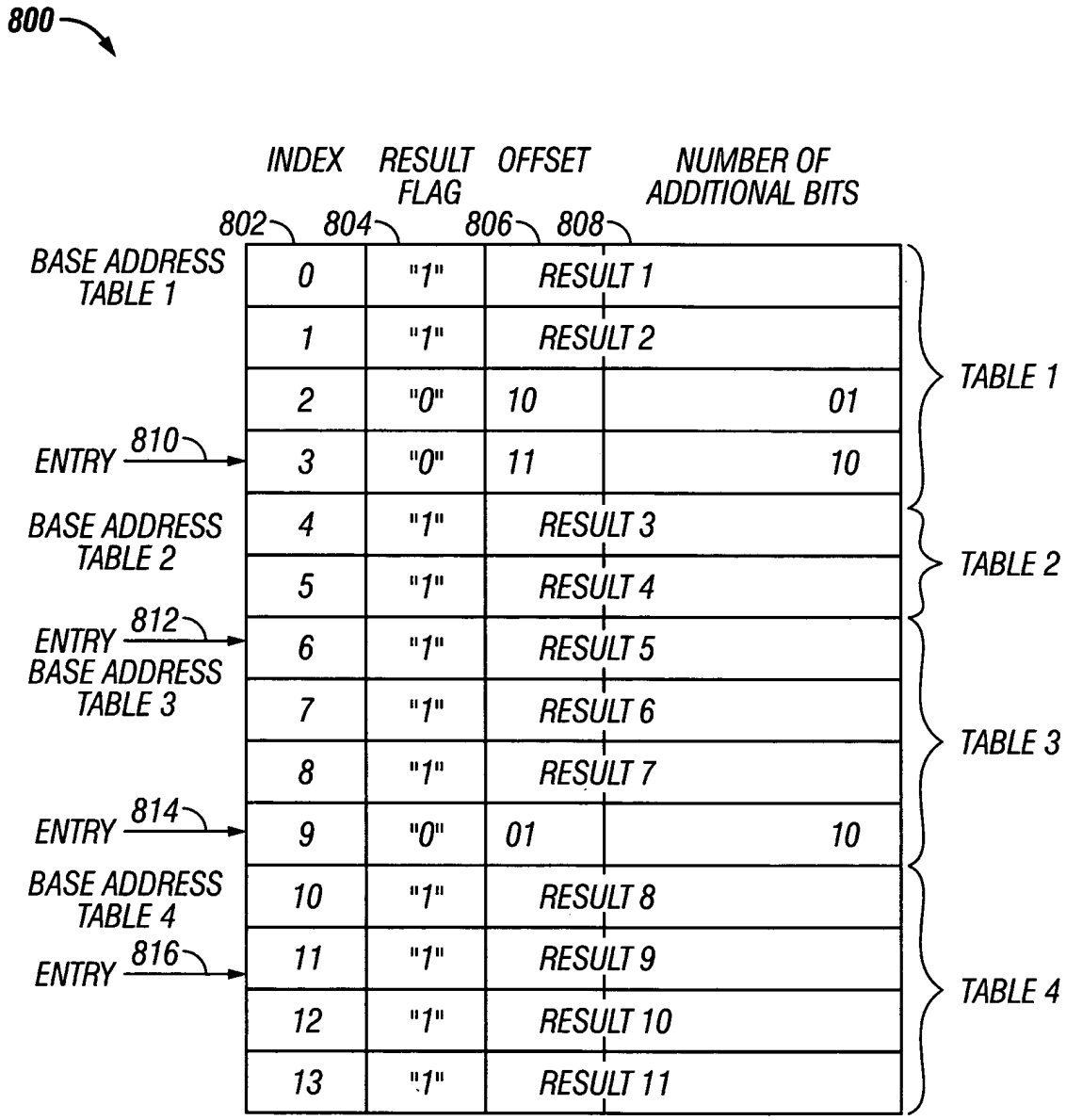
800
INDEX
RESULT FLAG
OFFSET
NUMBER OF ADDITIONAL BITS
802
804
806
808
BASE ADDRESS TABLE 1
0 "1" RESULT 1
1 "1" RESULT 2
2 "0" 10 01
ENTRY 810
3 "0" 11 10
BASE ADDRESS TABLE 2
4 "1" RESULT 3
5 "1" RESULT 4
ENTRY 812
6 "1" RESULT 5
BASE ADDRESS TABLE 3
7 "1" RESULT 6
8 "1" RESULT 7
ENTRY 814
9 "0" 01 10
BASE ADDRESS TABLE 4
10 "1" RESULT 8
ENTRY 816
11 "1" RESULT 9
12 "1" RESULT 10
13 "1" RESULT 11
TABLE 1
TABLE 2
TABLE 3
TABLE 4

FIG. 8

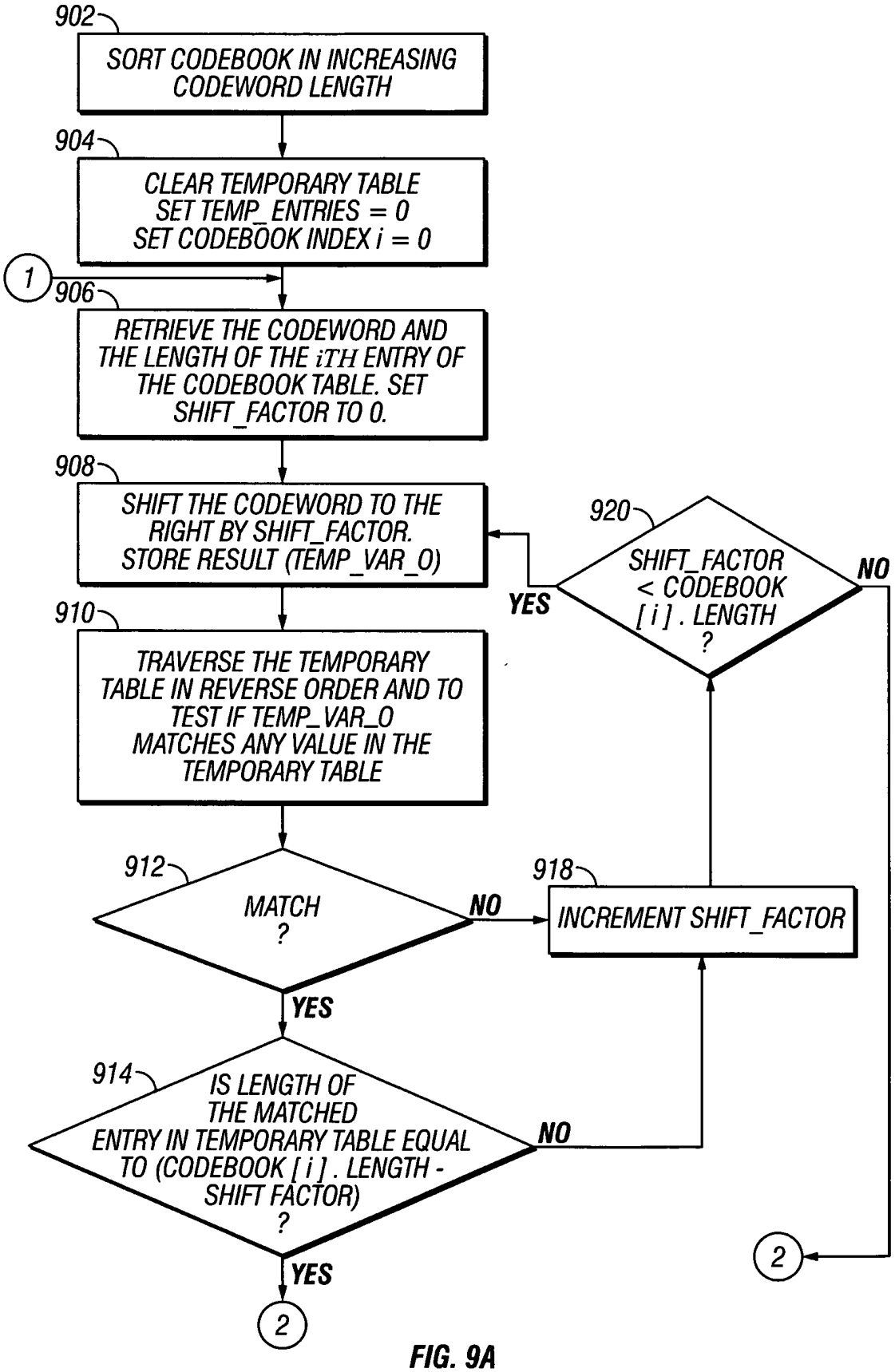
902
SORT CODEBOOK IN INCREASING CODEWORD LENGTH
904
CLEAR TEMPORARY TABLE
SET TEMP_ENTRIES = 0
SET CODEBOOK INDEX i = 0
1
906
RETRIEVE THE CODEWORD AND THE LENGTH OF THE iTH ENTRY OF THE CODEBOOK TABLE. SET SHIFT_FACTOR TO 0.
908
SHIFT THE CODEWORD TO THE RIGHT BY SHIFT_FACTOR. STORE RESULT (TEMP_VAR_0)
910
TRAVERSE THE TEMPORARY TABLE IN REVERSE ORDER AND TO TEST IF TEMP_VAR_0 MATCHES ANY VALUE IN THE TEMPORARY TABLE
912
MATCH ?
NO
YES
914
IS LENGTH OF THE MATCHED ENTRY IN TEMPORARY TABLE EQUAL TO (CODEBOOK [i] . LENGTH - SHIFT FACTOR) ?
NO
YES
2
918
INCREMENT SHIFT_FACTOR
920
SHIFT_FACTOR < CODEBOOK [i] . LENGTH ?
YES
NO
2

FIG. 9A

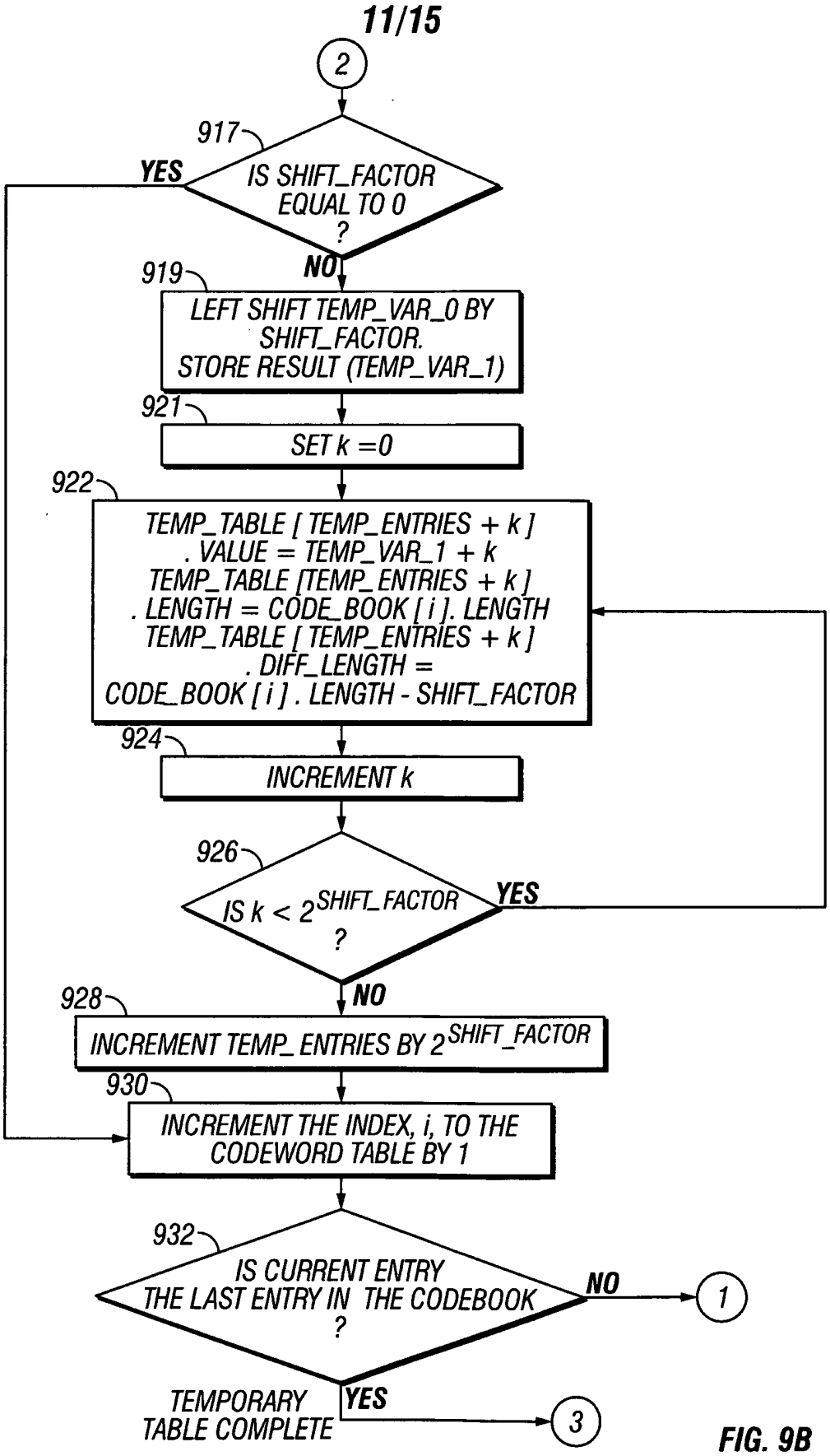
2
917
IS SHIFT_FACTOR EQUAL TO 0 ?
YES
NO
919
LEFT SHIFT TEMP_VAR_0 BY SHIFT_FACTOR. STORE RESULT (TEMP_VAR_1)
921
SET k =0
922
TEMP_TABLE [TEMP_ENTRIES + k] . VALUE = TEMP_VAR_1 + k
TEMP_TABLE [TEMP_ENTRIES + k] . LENGTH = CODE_BOOK [i]. LENGTH
TEMP_TABLE [TEMP_ENTRIES + k] . DIFF_LENGTH = CODE_BOOK [i] . LENGTH - SHIFT_FACTOR
924
INCREMENT k
926
IS k < 2SHIFT_FACTOR ?
YES
NO
928
INCREMENT TEMP_ ENTRIES BY 2SHIFT_FACTOR
930
INCREMENT THE INDEX, i, TO THE CODEWORD TABLE BY 1
932
IS CURRENT ENTRY THE LAST ENTRY IN THE CODEBOOK ?
NO
1
TEMPORARY TABLE COMPLETE
YES
3

FIG. 9B

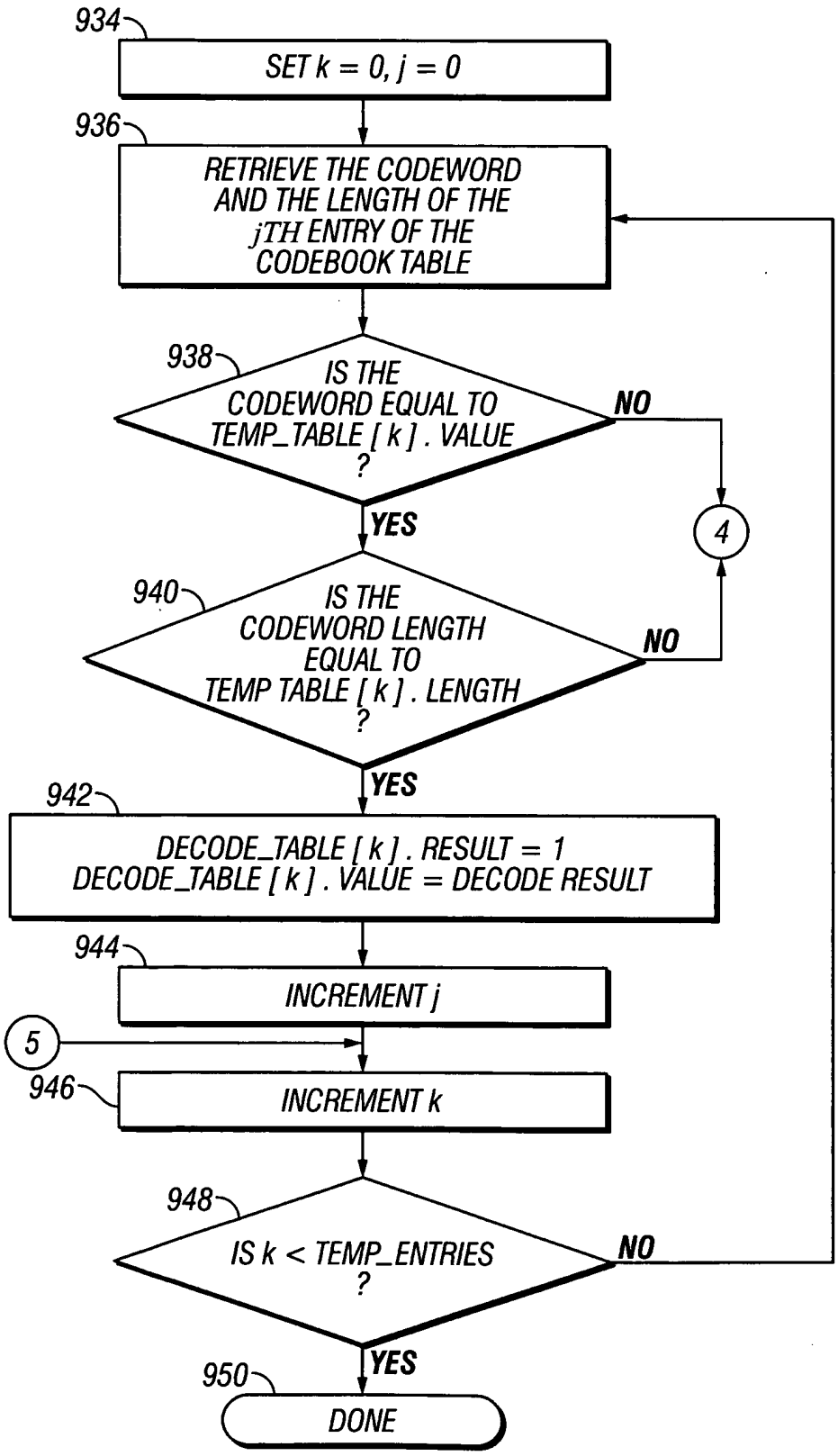
934
SET k = 0, j = 0
936
RETRIEVE THE CODEWORD AND THE LENGTH OF THE jTH ENTRY OF THE CODEBOOK TABLE
938
IS THE CODEWORD EQUAL TO TEMP_TABLE [k] . VALUE ?
NO
YES
4
940
IS THE CODEWORD LENGTH EQUAL TO TEMP TABLE [k] . LENGTH ?
NO
YES
942
DECODE_TABLE [k] . RESULT = 1
DECODE_TABLE [k] . VALUE = DECODE RESULT
944
INCREMENT j
5
946
INCREMENT k
948
IS k < TEMP_ENTRIES ?
NO
YES
950
DONE

FIG. 9C

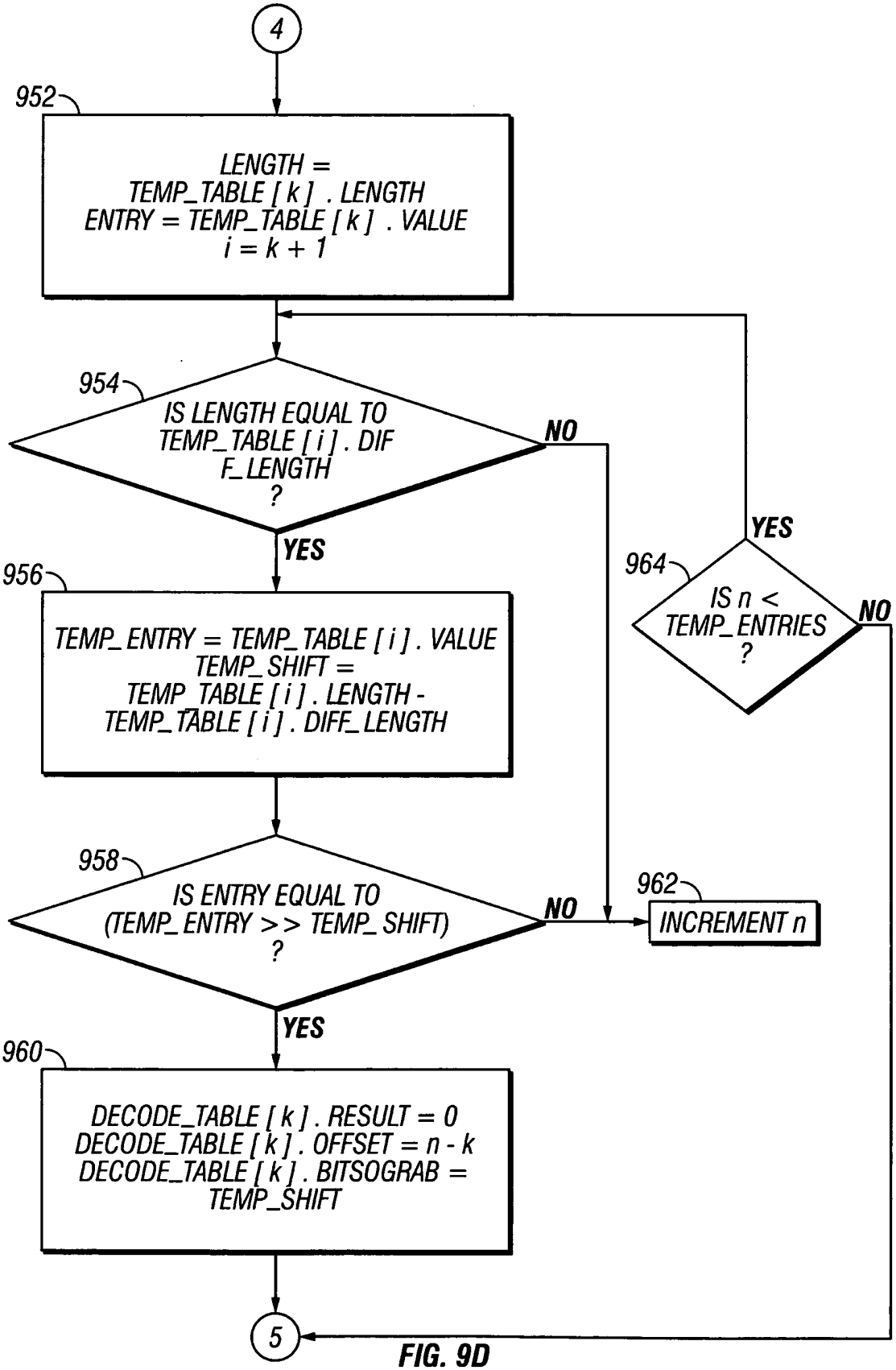
4
952
LENGTH =
TEMP_TABLE [k] . LENGTH
ENTRY = TEMP_TABLE [k] . VALUE
i = k + 1
954
IS LENGTH EQUAL TO
TEMP_TABLE [i] . DIF
F_LENGTH
?
NO
YES
956
TEMP_ENTRY = TEMP_TABLE [i] . VALUE
TEMP_SHIFT =
TEMP_TABLE [i] . LENGTH -
TEMP_TABLE [i] . DIFF_LENGTH
958
IS ENTRY EQUAL TO
(TEMP_ENTRY >> TEMP_SHIFT)
?
NO
YES
962
INCREMENT n
964
IS n <
TEMP_ENTRIES
?
YES
NO
960
DECODE_TABLE [k] . RESULT = 0
DECODE_TABLE [k] . OFFSET = n - k
DECODE_TABLE [k] . BITSOGRAB =
TEMP_SHIFT
5

FIG. 9D

1002 CODE BOOK	1004 M-ARY SEARCH	1006 BINARY SEARCH	1008 TWO-STEP TABLE LOOKUP
HCB_1	49	81	160
HCB_2	56	81	113
HCB_3	59	81	793
HCB_4	53	81	226
HCB_5	54	81	288
HCB_6	54	81	166
HCB_7	43	64	218
HCB_8	46	64	123
HCB_9	114	169	603
HCB_10	114	169	290
HCB_11	183	289	408
HCB_SF	82	121	2060

FIG. 10

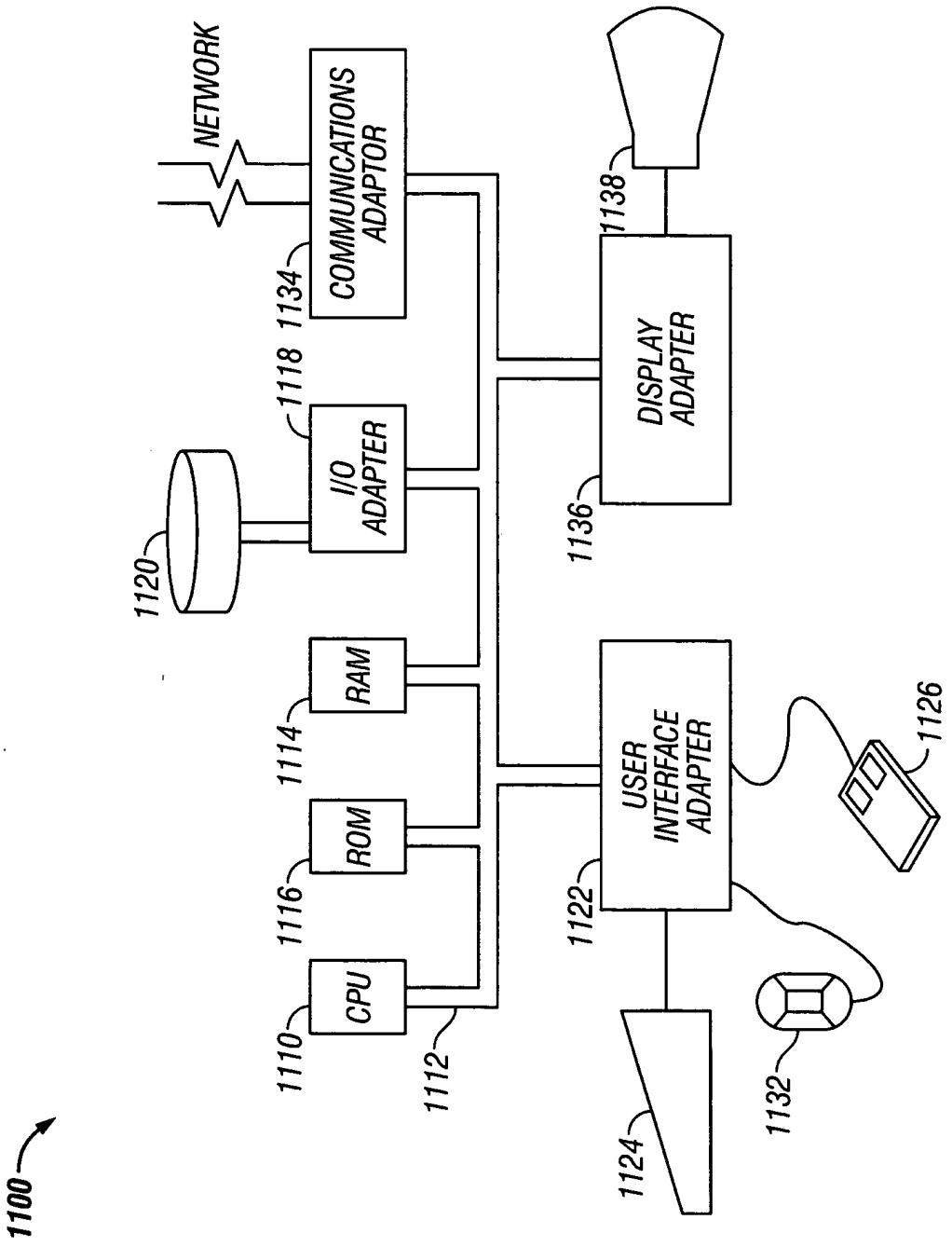
1100
NETWORK
COMMUNICATIONS ADAPTOR
1134
1118
I/O ADAPTER
1120
RAM
1114
ROM
1116
CPU
1110
1112
DISPLAY ADAPTER
1138
1136
USER INTERFACE ADAPTER
1122
1126
1124
1132

FIG. 11